



**SUPPLY AND OPERATIONS
MANAGEMENT COLLECTION**

Joy M. Field, *Editor*

Contemporary Issues in Supply Chain Management and Logistics

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Contemporary Issues in Supply Chain Management and Logistics

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CHAPTER 1

Introduction—About This Book

This book, titled “Contemporary Issues in Supply Chain Management and Logistics,” is a collection of chapters on issues we face today in the world of supply chain management. It consists of seven dynamic, current, and informative chapters that cover a variety of cutting-edge supply chain topics. This interdisciplinary book is of use to both graduate students and professionals working in the field because of its cutting-edge approach to emerging global issues. The book contains new, original research papers written by academics from the fields of engineering, transportation, information and decision systems, marketing, and, of course, supply chain management and logistics.

While there are a number of college text books related to specific areas within logistics and supply chain issues, there are very few general supply chain management “trends” books. Of the books that exist, the majority has a European-centered international focus. There is an untapped market to create a supply chain and logistics book to be used in college classes that uses examples in the United States. Indeed, undergraduate and graduate business schools are increasing their course offerings in logistics and supply chain management, based on student demand. Supply chain managers’ salaries are increasing and c-level positions are being added to many companies. To meet this demand, these new courses will require updated and relevant books that provide timely perspectives and examples using “real-world” situations. Additionally, professionals working in the field need to stay current on the trends and issues facing supply chain managers. They will be leading their corporations’ strategies on supply chain management. This book, therefore, feeds their position as thought leaders looking to make their supply chain leaner, more visionary, and reflective of the trends in supply chain management.

Chapter 2 of this book discusses research undertaken at the University of Illinois at Chicago (UIC) Center for Supply Chain Management and Logistics by UIC Professors Matt Liotine, Anthony M. Pagano, and Sidd Varma Gadiraju from Capgemini. It involves a two-year study that analyzes recent technological trends in the Logistics and Supply Chain Management space in the United States. The research focuses first on the vendors/suppliers of the technologies, progressing then to the buyers/users of these technologies. From this research, the chapter identifies emerging technologies, their implications, and acceptance, and utilization levels across various industry sectors.

Chapter 3 by William Stillman of GainSystems details the effort in trying to minimize the negative financial impacts of “Murphy’s Law.” This issue has challenged the executive suite for years. Corporations have spent hundreds of millions of dollars on outside consulting firms and enterprise software trying to manage the impact of “Murphy” on their inventory investment and operating costs. It then discusses a method to consistently achieve the “Perfect Order.” To achieve this with the maximum contribution to margin, one needs to plan across the enterprise at the most granular level. Therefore, one needs to account in that plan for all variables and needed to monitor the enterprise to identify any changes in Stock Keeping Unit Location (SKUL) behavior patterns, customer behavior patterns, or other relevant elements of the enterprise supply chain.

Fazle Karim and Professor Houshang Darabi of UIC review, in Chapter 4, the methods for demand forecasting and provide a comprehensive framework for the prediction of the demand of location-dependent services such as healthcare facilities, retail stores, banks, restaurants, and so on. The chapter discusses how accurate forecasting is becoming vital for survival and success of business, and how demand forecasting is also becoming the foundation of location-dependent services as it helps with marketing and revenue.

Chapter 5, written by Mellissa Gyimah, explores and discusses how education and academic intersect within supply chain management, and what people in the workforce look for as an educational foundation for students they would potentially hire. Essentially, what coursework do companies appreciate and value most so that potential employees are effective in their company as workers? Using a survey method and

analyzing individual's responses, we see the skills and educational background companies prefer and how it would be beneficial for companies and universities to collaborate moving forward.

The team of Pourabdollahi, Karimi, Mohammadian, and Kawamura are the authors of Chapter 6. This chapter is based on the PhD thesis of Zahra Pourabdollahi, now at RS&H, Inc in Tampa. Behzad Karimi of the University of South Florida, Professors Kouros Mohammadian and Kazuya Kawamura of UIC round out the team. In Chapter 6, we are exposed to the remarkable increase in freight movements and their significant impacts on the transportation system, regional well-being, and economic growth. This provides sufficient motivation to develop reliable analysis tools to estimate commodity flows between zones and forecast the future demand and trends of goods movements among regions. The chapter illustrates the need to develop freight demand models to better facilitate infrastructure planning and policy development by outlining a behavioral agent-based supply chain and freight transportation model for the Chicago Metropolitan Area. This multimodal freight model addresses critical technical and conceptual hurdles that have challenged past efforts by applying an agent-based framework.

The initial part of Chapter 7, written by Professor Chis Westland of UIC, addresses the research question of how you create an accurate customer demand forecast for a single item inventory where demand is indirectly observed by tracking inventory levels. Inventory management and control are often myopic. The only information that management has available for the customer demand input to their policy model comes from the inventory levels over time, which is inherently right-censored by stock-outs (where demand exceeds supply). The remainder of the chapter delineates a methodology to address customer demand forecast errors that can contribute to suboptimization in supply-chain algorithms. It introduces a separable demand forecasting based on Kaplan–Meier estimators using data only from inventory levels, while providing examples of the application of such estimators to elicit demand forecast time-series. Finally, the chapter incorporates the forecasts generated from Kaplan–Meier estimators using data only from inventory levels into a basic inventory restocking algorithm.

Chapter 8, written by Anthony M. Pagano, discusses Public–Private Partnerships (PPP) that is in the forefront of approaches to funding

transportation infrastructure improvements. Highlighted in the highway area by long-term leases of the Chicago Skyway and Indiana Toll Road, a variety of states are investigating the use of PPP either as “Brownfield” leases such as the Chicago and Indiana cases, or “Greenfield” Design, Build, Operate, Transfer arrangements. These and other PPP projects raise a variety of issues, including the length of the lease, toll escalation permitted, and use of funds. This paper develops a rationale for PPPs in transportation, evaluates several approaches to PPPs using this rationale, and analyzes some of the difficult issues that can surface.